Chapter 4

Airspace Development

Efforts to expand airport capacity or implement improved instrument approach procedures will not be completely effective unless the terminal and en route airspace can handle the increased traffic. Airspace capacity design serves to emphasize the "system" nature of the delay problem and the need for an integrated approach that coordinates the development of capacity-producing alternatives. Airport improvements, enhanced air traffic control procedures, and improvements in terminal and en route airspace are frequently interrelated — changes in one require changes in the others before all of the potential capacity benefits are realized.

Efforts to expand airport capacity or implement improved instrument approach procedures will not be completely effective unless the terminal and en route airspace can handle the increased traffic.

Airspace Capacity Studies are one of several programs underway to improve the efficiency of the airspace system. In a joint effort among the Office of System Capacity, Air Traffic, Office of Environment and Energy, and a contractor that conducts the simulation modeling, 15 Airspace Capacity Studies have been completed, and two are currently in progress. Air Traffic, normally at the Regional level, develops the alternatives that will be tested in the simulation runs, and the proposed alternatives are generally examined in an ARTCC-wide context. Where possible, these studies reflect community involvement and FAA's responsiveness to community-developed alternatives.

A variety of computer models have been used to analyze a broad spectrum of capacity solutions. Since 1986, the Office of System Capacity has been applying SIMMOD, the FAA's Airport and Airspace Simulation Model, to large scale airspace redesign issues. The first such project was an analysis of the Boston ARTCC in support of the expansion of that facility's airspace. Similar studies were initiated at the Los Angeles, Fort Worth, and Chicago ARTCCS, studying issues as diverse as resectorization, special use airspace restrictions, new routings, complete airspace redesign, and new runway construction. Computer modeling has been used to quantify delay, travel time, capacity, sector loading, and aircraft operating cost impacts of the proposed solutions.

Significant solutions to capacity and delay problems have been identified through airspace design. At Dallas-Ft. Worth, for example, effects of the Metroplex plan were studied both with and without new runway construction. Results indicated an immediate savings from airspace changes alone. The airspace design projects completed to date have identified tens of millions of dollars in delay savings, and the vast majority of the airspace improvements identified in these studies either have been or are being implemented.

Table 4-1 summarizes the completed airspace studies by listing the generalized categories of the various alternatives studied. The majority of the studies considered new arrival and departure routes, modifications to ARTCC traffic, and redefinition of TRACON boundaries among their alternatives. Two studies, at Denver and Houston-Austin, analyzed a new airport with its associated airspace, while three studies, at Kansas City, Dallas-Ft. Worth, and Chicago, analyzed new runways at existing airports. Four of the studies, Houston-Austin, Oakland, Dallas-Ft. Worth, and Los Angeles, modeled military traffic, restricted airspace, special use airspace, or the interactions of a military airfield with the civilian airport.

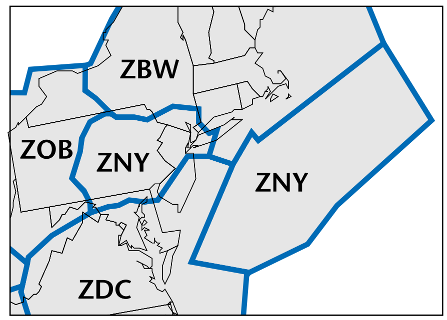
The FAA plans to institutionalize these airspace modeling activities by expanding the capability of its Technical Center in Atlantic City, NJ. Under the direction of the Office of System Capacity (ASC), the Technical Center, and soon the National Simulation Capability (see Section 5.5.1), will provide the FAA with the resources to conduct studies using a variety of models.

Table 4-1. Summary of Airspace Improvement Alternatives Analyzed.

Studied Alternatives / Airspace Regions	Chicago	Dallas-Ft. Worth	Denver	Expanded East Coast Plan	Houston-Austin	Kansas City	Los Angeles	Oakland	New York	Jacksonville	Atlanta	Miami
Relocating arrival fixes	√	√				√					√	
New arrival routes		√	√	√	√	√		√	√	√	√	√
New departure routes	√		√	√	√	√	√	√	√	√	√	√
Modifications to ARTCC traffic		√		√	√	√	√	√	√	√	√	
New airport			√		√							
Hub/non-hub alternatives					√							
Change in metering restrictions	√			√				√				√
Redifining TRACON boundaries		√		√	√		√	√			√	
Redifining sector ceilngs									√	√	√	
Resectorization									√	√	√	√
Military traffic considered		√			√		√	√				
New runways at existing airports	√	√				√						
Specific modeling of 2 or more airports for interactions analysis	√	√				√			√	√	√	√

What follows are excerpts from the last four airspace studies that were completed. The New York and Jacksonville Air Route Traffic Control Centers (ARTCCs) include a description of the alternatives analyzed and the results of the analysis. For the other two studies, Atlanta and Miami ARTCCs, a brief description of the alternatives is included. It should be noted that these studies only considered the technical and operational feasibility of the proposed alternatives. Environmental, socioeconomic, and political issues were outside the scope of the studies and need to be addressed in future planning activities.

4.1 New York Airspace Capacity Project



The objective of the New York Airspace Capacity Project was to evaluate the delay and capacity impacts of proposed operational alternatives aimed at increasing capacity, reducing delay, and improving the overall efficiency of air traffic operations. The operational area of concern included operations within the New York Center and portions of Boston, Cleveland, and Washington Centers; and at Newark International, White Plains/Westchester County, Islip/Long Island MacArthur, John F. Kennedy International, LaGuardia, Philadelphia International, Newburgh/Stewart International, and Teterboro Airports.

To meet the objective of the New York Airspace Capacity Project, four major simulation analysis tasks were completed. The first task involved analyzing the impact of splitting Liberty Area's East Departure position into a high-low operation and rerouting certain traffic through the new low sector based on aircraft type and/or destination. The second task entailed evaluating air traffic operations under the proposed resectorization of New York Center Area D. The resectorization plan is aimed at relieving complexity and saturation problems associated with operations in New York Center's Sector 75 and involved the realignment of five en route sectors. The third task was an analysis to evaluate traffic loading impacts on the Stewart Area sector for three proposed ceiling realignment options. The fourth task involved an analysis of proposed new south arrival and south departure routings for Newburgh/Stewart International Airport to determine sector traffic loading impacts for potential future traffic growth.

4.1.1 Liberty East Reconfiguration and Rerouting

The first simulation analysis task involved evaluating the impacts of splitting New York TRACON Liberty Area's East Departure position into a high-low operation. The proposed operational alternative entails creating a new controller position and assigning all Liberty East airspace at or below 9,000 feet to the low operation. In addition to the traffic currently operating at 9,000 feet and below, additional flights departing to the northeast would also be rerouted to the new low sector based on destination and/or aircraft type.

Liberty East sector is situated just northeast of Newark International, JFK International, LaGuardia, and Teterboro Airports, northwest of Islip/Long Island MacArthur Airport and directly above White Plains/Westchester County Airport. The current Liberty East sector encompasses, at its maximum, a distance of 35 miles north to south and 45 miles east to west and abuts portions of New York and Boston Center en route airspace. The base of Liberty East airspace commences at 7,000 feet and attains its highest altitude at 17,000 feet. Considerable shelving exists at the lower altitudes where Liberty East interfaces with other New York TRACON sectors.

Proposed airspace changes to Liberty Area's East Departure sector entailed the splitting off of all existing Liberty East airspace at or below 9,000 feet. A new Liberty East low sector is created from the lower portions of the eastern half of the existing Liberty East sector. The remaining Liberty East airspace (referred to as the new Liberty East high sector) is comprised of the Liberty East airspace at and above 10,000 feet. It was assumed that departures which currently transit Liberty East airspace at or below 9,000 feet would, under the reconfigured airspace, be routed at the same existing altitudes, and therefore, be worked by the new Liberty East low sector controller.

Ten operational scenarios were simulated for the Liberty East reconfiguration and rerouting analysis. Nine potential alternatives were simulated for comparison to the baseline "do nothing" case (Alternative 0). Alternative 1 entailed reconfiguration of Liberty East only, without rerouting of any traffic. For Liberty East Alternatives 2 through 9, various combinations of flights currently using altitudes at or above 10,000 feet (i.e., in the new Liberty East high sector) were rerouted to the new Liberty East low sector. Three distance ranges were used in each scenario as criteria for rerouting traffic from new Liberty East high sector to new Liberty East low sector.

Results of the analysis for Alternative 0, or the "do nothing" case, show that traffic is projected to increase 19 percent (98 aircraft) by the year 1997 and 34 percent (173 aircraft) for the year 2003. With current operational conditions requiring potential airspace realignment and rerouting of traffic for Liberty East sector, it is most likely that these future traffic increases projected for Liberty East will result in even greater workload problems and issues.

Alternative 1 considered reconfiguring Liberty East Departure sector into a high-low operation without rerouting any traffic. This alternative provided some degree of relief, but a further redistribution of traffic between new Liberty East high and new Liberty East low sectors is recommended if a more equitable balance between the sectors is to be achieved in both the near and future years. The shift in traffic flows between the new sectors under Alternatives 2 and 4, when compared to Alternative 1 results, tends towards a more balanced distribution of traffic between the two new Liberty East sectors throughout the day. Liberty East departure flights destined for airports within the 126-175 nautical mile range of the New York area are pivotal in redistributing traffic from the new Liberty East high sector into the new Liberty low sector for purposes of balancing traffic loading. The remaining alternatives show even more improvement in reducing the percentage of time that the sectors are saturated during the day (the sector is considered saturated during a 15-minute period if the controller is continuously working the maximum number of aircraft).

4.1.2 Resectorization of New York ARTCC (ZNY) Area D

The second task evaluated air traffic operations under the proposed resectorization of New York Center Area D. The resectorization plan is aimed at relieving complexity and saturation problems associated with operations in ZNY Area D Sector 75. To accomplish the proposed operational changes, significant resectorization of Sector 75 and four other ZNY Area D sectors was necessary (Sectors 74, 91, 92, and 93). ZNY Sector 75 is the focal point of the New York Center Area D resectorization plan. ZNY Area D Sector 75 is located to the north of Sector 73 and directly abuts Cleveland Center airspace. Except for a small portion located in the northeast corner, Sector 75 commences at FL180 and extends up to

FL600. The northeast portion of Sector 75 encompasses airspace from FL180 up to FL230. Sector 75 lateral airspace varies in distance from 40 miles north to south to over 100 miles east to west.

Resectorization of Sector 75 will require a slight extension of the farthest northwest corner of Sector 75 airspace. The only other airspace modification to Sector 75 requires raising the floor from FL180 to FL220. Adjacent Sectors 74 and 93 will acquire the airspace between FL180 and FL220. With the realignment of Sector 75, Newark International and LaGuardia arrivals will be descended to FL220 earlier for hand off to Sector 74. In addition, all Baltimore traffic will be removed from Sector 75 to be worked by Sector 93. Elmira, Binghamton, and Utica arrivals will also be removed from Sector 75 along with any overflight traffic below FL220. Philadelphia International, Allentown, Lancaster, and Harrisburg northbound departures will be assigned to Sector 74, thus bypassing Sector 75.

Results of the analysis show that on the average day, the resectorization of ZNY Area D would result in daily delay savings amounting to 13, 35, and 122 hours per day for the 1991, 1997, and 2003 demand levels, respectively. These delay savings equate to an annual aircraft operating cost savings of $7.6 million, $20.4 million, and $71.2 million, per respective year.

The primary goal of the resectorization of ZNY Area D is to reduce complexity and saturation within Sector 75 by reducing the level of traffic worked by the ZNY Sector 75 controllers during busy periods. For the baseline (1991) year, there was a 17 percent decline in Sector 75 daily operations. The reduction would be 18 percent in 1997 and 18 percent in 2003. By resectorizing ZNY Area D, Sector 75 would realize substantial reduction in 15-minute sector occupancy averages throughout the majority of the day. These declines in sector occupancy averages result from the traffic rerouted from Sector 75 into Sectors 74 and 93, plus the reduction in the time aircraft are worked by Sector 75 due to Sectors 74 and 93 assuming portions of Sector 75 airspace.

4.1.3 Stewart Area Airspace Redesign

The third simulation analysis evaluated air traffic operations under the proposed raising of the ceiling of the southern portion of the New York TRACON Stewart Area. The proposed alternatives consist of Stewart Area ceiling altitude changes of 10,000, 14,000, and 17,000 feet. Under these three ceiling options, traffic loading is evaluated to determine the additional traffic which Stewart Area would acquire if the new ceiling altitudes were implemented.

There are eleven airports located in the Stewart Area with Newburgh/Stewart International (SWF) and Dutchess County (POU) accounting for the majority of traffic. Newburgh/Stewart International Airport is situated 40-50 miles to the north of Newark International, John F. Kennedy International, and LaGuardia Airports. Stewart Area encompasses, at its maximum, a distance of 50 miles north to south and 85 miles east to west. Current Stewart Area ceilings range between 4,000 to 6,000 feet with the northwestern portions of Stewart Area overlying areas of high terrain. Stewart Area airspace underlies portions of both New York and Boston Center en route airspace.

By raising the southern portion of the Stewart Area to 10,000 feet, Stewart Area would acquire 329 additional flights over the busiest periods of the day. This increase in traffic is over a 200 percent increase above current traffic loading in the Stewart Area. A ceiling realignment to 14,000 feet for Stewart Area's southern portion would result in Stewart Area acquiring an additional 113 flights above the number attained with the ceiling realignment at 10,000 feet. Total traffic for Stewart Area with the 14,000 foot ceiling realignment would increase to 593 flights during the busiest periods, an increase over the current traffic level of nearly 400 percent. A 17,000 foot ceiling in the Stewart Area's southern portion would further increase traffic counts for Stewart Area during the busiest periods to a total of 630 flights.

4.1.4 Potential Traffic Growth at Newburgh/Stewart International Airport (SWF)

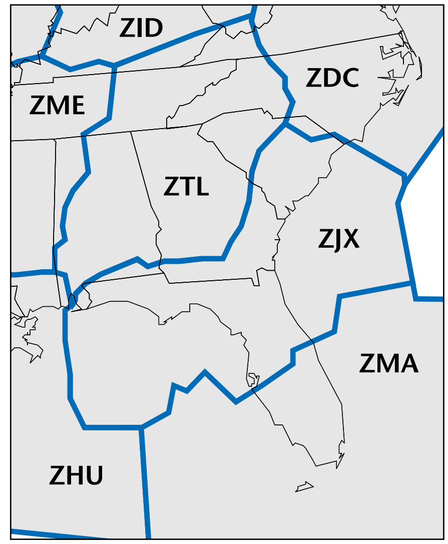
The fourth task analyzed proposed new arrival and departure routings to the south of Newburgh/Stewart International Airport to determine traffic loading implications for potential future traffic growth at SWF. Simulation results were analyzed to evaluate the impact that additional Newburgh/Stewart International departure flights would have on ZNY Sectors 39 and 10, and the impact that additional arrival flights to Newburgh/Stewart International Airport would have on the new proposed Liberty East high sector.

For the Liberty East high sector scenario, it was assumed that the Liberty East Departure sector is split into a new high-low operation and that the Stewart Area southeast ceiling is raised to an altitude allowing new Liberty East high sector to hand off directly to Stewart Area. For the potential Stewart Area Airport growth scenarios, two traffic level increases were simulated for Newburgh/Stewart International Airport south departures and arrivals. The first traffic level increase (medium growth) consisted of 30 additional south arrivals and south departures at Newburgh/Stewart International Airport per day. The second traffic level increase (high growth) consisted of 60 additional south arrivals and departures per day.

ZNY Sectors 39 and 10 would be impacted by potential traffic growth at Newburgh/Stewart International Airport due to traffic utilizing a proposed new south departure route from SWF. Medium traffic growth could potentially impact early morning operations for both Sectors 39 and 10. Under high traffic growth levels at SWF, the early morning traffic flow increases become quite substantial and sustained in duration and would most likely result in workload issues for both Sectors 39 and 10.

The proposed new Liberty East high sector would also be impacted by potential traffic growth at Newburgh/Stewart International Airport due to traffic utilizing a proposed new south arrival route to SWF. The new Liberty East high sector would be slightly impacted during the morning period under medium traffic growth at SWF. Under the high traffic growth scenario, new Liberty East high sector would experience substantial and sustained increases in early morning as well as afternoon traffic flows, potentially resulting in workload considerations for new Liberty East high sector.

4.2 Jacksonville Airspace Capacity Project



The objective of the Jacksonville Airspace Capacity Project was to evaluate the capacity and delay impacts of proposed operational alternatives aimed at increasing capacity, reducing delay, and improving the overall efficiency of air traffic operations at Jacksonville Center (ZJX), Orlando Approach Control, Tampa Approach Control, and Orlando International (MCO) and Tampa International (TPA) Airports. Measures that could increase capacity and reduce delays were considered solely on a technical basis. Environmental, economic, social, or political issues were beyond the scope of the study.

Five major simulation analysis tasks were completed. The first task involved analyzing the impact on Jacksonville Center traffic resulting from a proposed reconfiguration of the Palatka MOA Complex. The second task entailed an evaluation of the proposed implementation of a jet airway between Charleston VORTAC (CHS) and Ormond Beach VORTAC (OMN). The third task was an evaluation of the impact of a similar proposed jet airway between St. Petersburg VORTAC (PIE) and a point 42 nautical miles (nm) west of Tallahassee VORTAC (TLH). The fourth task involved an analysis of the impact of raising the ceiling of Orlando Approach Control in conjunction with modifying arrival and departure routings. The fifth task entailed an evaluation of an alternative en route airspace design within Jacksonville Center.

4.2.1 The Proposed Palatka MOA/ATCAA Realignment

This first task analyzed a proposal to modify the lateral and vertical limits of the existing Palatka MOAs and redesignating the airspace above the proposed MOA expansion as ATC Assigned Airspace (ATCAA). In scenarios simulating the proposed Palatka MOA/ATCAA Complex, the existing Polatka MOAs were reconfigured to reflect airspace structures extending from 1200 feet AGL (above ground level) up to and including FL430. A substantial expansion of the lateral boundaries of the existing airspace was also required.

The proposed Palatka MOA/ATCAA Complex would require Jacksonville Center to release large portions of several low, high, and ultra-high sectors for special use operations during the hours of activation.

The impact of rerouting Jacksonville Center traffic currently overflying the proposed Palatka MOA/ATCAA results in delay and travel time penalties. Delay time increases account for the majority of the total time penalty realized for the traffic demand schedules evaluated. In the baseline (1991) case, a total daily flight time penalty of 4.1 hours per day is realized with the annual cost penalty equating to $2.4 million. Annual cost penalties increase to $11.0 million and $120.6 million for the 1997 and 2003 traffic demand levels. This proposed alternative would substantially reduce airspace previously available for the vectoring of traffic to relieve congestion. Requiring traffic to be rerouted around the expanded Palatka MOA Complex, significantly reduces the flexibility of controllers to utilize vectors and/or direct routes to expedite traffic movement. Controllers currently use portions of the airspace to be included in the proposed Palatka MOA expansion for sequencing of Orlando Approach Control arrival and departure traffic and vectoring/direct routing of Jacksonville Center overflight traffic.

4.2.2 Rainbow Area Airway

The objective of the Rainbow Area Airway analysis was to evaluate the potential benefits that may be realized by establishing a jet airway between Charleston VORTAC (CHS) and Ormond Beach VORTAC (OMN). The proposed airway would traverse airspace currently designated as special use airspace (SUA), impacting the area commonly known as the "Rainbow Area." In addition to acquiring portions of the Rainbow Area, other requirements necessary to establish the proposed airway would include: releasing all altitudes for the jet airway from special use; incorporating any remaining special use airspace FL180 and above west of the proposed airway boundary and J79; and releasing special use airspace below FL180 located just north of OMN to accommodate the descent and vectoring of arrival traffic into the Orlando terminal area. The proposed airway would require no change to the physical boundaries of any existing Jacksonville Center sector structures, but the usable airspace available for traffic movement within the impacted sectors would be increased. Rerouting of traffic through any new or additional sectors would not be required.

The implementation of a proposed jet airway between Charleston VORTAC (CHS) and Ormond Beach VORTAC (OMN) would reduce flight time and increase available airspace for improved flexibility and efficiency in the movement of air traffic. During Visual Meteorological Conditions (VMC), the proposed jet airway would result in daily travel time and delay savings totaling 1.7, 2.4, and 4.4 hours for the years 1991, 1997, and 2003, respectively. This delay savings would provide $1.0 million, $1.4 million, and $2.6 million in cost savings per traffic demand year. Additional operating cost savings can be realized with the proposed airway during periods when thunderstorms preclude or reduce the availability of current routes. In a year where thunderstorm activity was to occur a total of 60 times, lasting an average duration of two hours, the aircraft operating cost savings realized by having the proposed airway available would total $13.8 million, $23.8 million, and $56.7 million in years 1991, 1997, and 2003, respectively.

4.2.3 Proposed ACMI Thunder Area Airway

The objective of the ACMI/Thunder Area Airway impact analysis was to evaluate the potential benefits that may be realized by establishing an airway between St. Petersburg VORTAC (PIE) and a point 42 NM west of Tallahassee VORTAC (TLH). The proposed airway would traverse portions of the special use airspace designated as the ACMI/Thunder Area. The analysis involves an evaluation of the potential benefits derived by overflight traffic from the implementation of the proposed airway.

The proposed airway would require no change to the physical boundaries of any existing Jacksonville Center sector structures, but the usable airspace available for traffic movement within the sectors with the proposed airway would be increased. Rerouting of traffic through any new or additional sectors would not be required.

The implementation of a jet airway between St. Petersburg VORTAC (PIE) and a point 42 nm west of Tallahassee VORTAC (TLH) would also increase the available airspace for improved movement of traffic within Jacksonville Center. During VMC, the proposed jet airway would result in daily travel time and delay savings totaling 1.6, 2.0, and 6.4 hours for the years 1991, 1997, and 2003, respectively. The delay savings would provide $1.0 million, $1.2 million, and $3.7 million in cost savings per traffic demand year.

The availability of the proposed jet airway (between PIE and a point 42 nm west of TLH) to traffic during periods of thunderstorm activity would also result in significant operating cost savings. For example, if yearly thunderstorm activity were to occur a total of 60 times, lasting an average duration of two hours, the aircraft operating cost savings realized by having the proposed airway available would total $2.1 million, $7.9 million, and $25.1 million in years 1991, 1997, and 2003, respectively.

4.2.4 Orlando Approach Control Airspace Modification

The fourth task was to analyze the impact of raising the ceiling of the current Orlando Approach Control airspace, in conjunction with modifying arrival and departure routings. This scenario was conducted to evaluate possible improvement of the traffic flow within Jacksonville Center. The proposed Orlando Approach Control reconfiguration raises the existing ceiling of the approach control from 12,000 to 14,000 feet, expanding terminal airspace in order to provide Jacksonville Center the capability to establish dual jet arrival routes and segregated jet and turboprop departure routes.

Orlando Approach Control currently provides air traffic services in the airspace up to 12,000 feet and out to distances of 50 NM from Orlando International Airport. Orlando Approach Control airspace is located in central Florida and is situated beneath the common boundary between Jacksonville and Miami Centers. The primary airports serviced by Orlando Approach Control include Orlando International (MCO), Orlando Executive (ORL), and Sanford/Central Florida Regional (SFB) Airports.

To raise the ceiling of Orlando Approach Control from 12,000 to 14,000 feet, airspace would have to be acquired from the Jacksonville Center low altitude sectors directly above the current approach control airspace. In conjunction with raising the ceiling, arrival and departure routes within Orlando Approach Control would also have to be modified.

The Orlando Approach Control Airspace modification option realized savings in daily delay and flight time during all three traffic demand levels. The improved efficiency of the en route system results from traffic entering and departing Orlando Approach Control airspace in a less restricted manner, and the utilization of the reduced separation standards available in the expanded terminal environment. Raising the Orlando Approach Control ceiling from 12,000 to 14,000 feet expands terminal airspace, providing the capability for Jacksonville Center to establish both, dual jet arrival routes and segregated jet and turboprop departure routes. The capability to use dual arrival and segregated departure routes under the proposed Orlando Approach Control airspace realignment would result in daily en route delay and travel time savings amounting to

3.5, 4.7, and 22.2 hours per day for the 1991, 1997, and 2003 traffic demand levels, respectively. The combined savings equate to an annual aircraft operating cost savings of $2.0 million, $2.7 million, and $13.0 million, per respective traffic demand year.

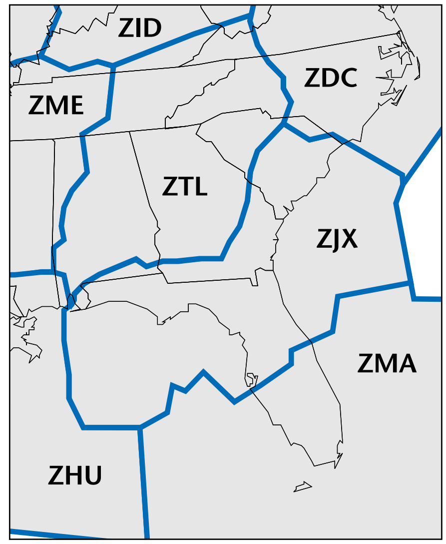
4.2.5 Jacksonville Center Proposed Airspace Redesign Alternative

The final analysis objective of the Jacksonville Airspace Capacity project was to assess the impact and potential benefits of a proposal to modify the floors and ceilings of special sectors within Jacksonville Center. The analysis of the Jacksonville Center Airspace Redesign alternative involved simulating en route airspace operations for existing and proposed sector configurations. Traffic demand levels for the baseline year (1991) and future projected traffic levels for years 1997 and 2003 were simulated.

The Jacksonville Center Airspace Redesign alternative would require airspace realignment for 27 of the 38 en route sectors. The majority of these airspace changes would involve floor and/or ceiling realignments. Four Jacksonville Center low altitude sectors would also require lateral boundary expansions in order to acquire airspace above adjacent approach controls. The proposed realignment of the designated Jacksonville Center sectors would have the effect of redistributing some existing traffic flows from one airspace structure to another. No rerouting of existing traffic flows was proposed.

Results from the simulation indicate that the benefits that may be gained by the realignment of the floors and/or ceilings of sectors within Jacksonville Center include a more balanced traffic distribution, improved intra-facility coordination, added flexibility for the handling of traffic during demand peaks, and improved efficiency in merging traffic.

4.3 Atlanta Center Airspace Capacity Project



The objective of the Atlanta Center Airspace Capacity Project was to evaluate the capacity and delay impacts of proposed operational alternatives aimed at increasing capacity, reducing delay, and improving the overall efficiency of air traffic operations within Atlanta Center and at Charlotte (CLT), Raleigh-Durham (RDU), and Birmingham (BHM) Approach Controls, and Atlanta, Charlotte/Douglas, and Raleigh-Durham International Airports and Birmingham Airport.

Seven analysis tasks were studied to meet the objectives of the Atlanta Center Airspace Capacity Project. Those analysis tasks are briefly described below.

The first task involved raising the ceiling at Raleigh Approach Control airspace from 10,000 to 12,000 feet. Potential benefits associated with realigning Raleigh Approach Control would be a more efficient traffic merging with Washington Center, a reduction in intra- and inter-facility coordination, an expansion of approach control airspace for more flexible handling of arrival and departure traffic, and relaxation of departure restrictions. Rerouting of existing traffic flows was not required under the Raleigh Approach Control ceiling realignment option. However, certain miles-in-trail and speed restrictions currently in effect were relaxed.

The second task involved raising the ceiling at Charlotte Approach Control from 12,000 to 14,000 feet, at Raleigh Approach Control from 10,000 to 14,000 feet, and those at Greensboro and Fayetteville Approach Controls from 10,000 to 12,000 feet. En route corridors were maintained from 11,000 feet and above across Fayetteville and Greensboro Approach Controls for buzzy and majic arrivals respectively. Rerouting of existing traffic flows was not required under the four ceilings realignment option. However, certain miles-in-trail and speed restrictions currently in effect were relaxed.

The third task analyzed the impact of moving the boundary of Washington Center to the west to assume full control of Raleigh Approach Control and portions of low, high, and ultra-high altitude sectors in Atlanta Center. Extensive routing and terminal airspace changes were also proposed to accommodate rotation of the Bedposts/Cornerposts within Raleigh Approach Control airspace. A second departure gate for Charlotte International Airport southbound jet traffic was also developed. Other related scenarios within the alternative evaluated several approach control ceiling realignments.

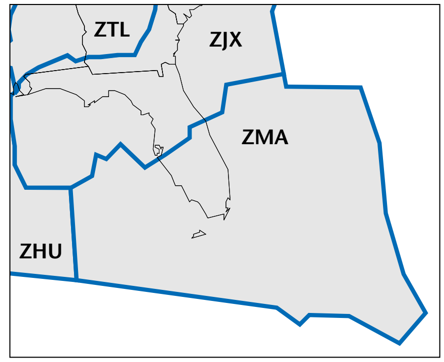
The fourth task involved analyzing the impact of moving the boundary of Atlanta Center to the east along a line crossing approximately over SBV, RDU, and FAY, with Atlanta Center possibly acquiring the equivalent of three low altitude sectors from Washington Center. In this analysis, there was a redefinition of several en route sectors, establishment of new en route sectors, and extensive routing and terminal airspace changes to accommodate rotation of the Bedposts/Cornerposts within Raleigh Approach Control airspace. A second departure gate for Charlotte International Airport southbound jet traffic was also developed. Other related scenarios within this alternative evaluated several approach control ceiling realignments.

The fifth task analyzed the impact of extending the existing Jet Airway 209 and rerouting certain flights currently entering Atlanta Center Airspace between the Meridian (MAW) and Crestview (CEW) VORTACs. The proposed lengthening of J209 required adding a segment to the current airway beginning at Greenwood VORTAC (GRD) and extending southwest to the Columbus VORTAC (CSG). Traffic with specific destinations would be rerouted onto the proposed segment, at a point south of where current J209 traffic flow is merged. To facilitate the airway extension, a proposed modification to the current sectorization within the Atlanta Center high altitude structure, south of Atlanta VORTAC (ATL), was required.

The sixth task analyzed the impact of eliminating Atlanta Center's Birmingham Sector (12) by expanding Rome (01), West Departure (04), and Maxwell (14) sectors' boundaries to encompass airspace and associated traffic within the existing Birmingham Sector (12). The objective of this task was to determine the additional traffic which Rome (01), West Departure (04), and Maxwell (14) sectors would acquire under current and future traffic demand levels if Birmingham Sector (12) was eliminated.

The seventh task evaluated the impact of raising the ceiling of Birmingham Approach Control from 10,000 to 12,000 feet and modifying arrival and departure routings in order to establish Arrival and Departure Transition Areas (ATAS/DTAS).

4.4 Miami Center Airspace Capacity Project



The objective of the Miami Airspace Capacity Project was to evaluate the capacity and delay impacts of proposed operational alternatives aimed at increasing capacity, reducing delay, and improving the overall efficiency of air traffic operations within Miami Center, at Miami, Orlando, and Tampa Approach Controls, and Miami, Orlando, and Tampa International Airports.

Four analysis tasks were studied to meet the objectives of the Miami Center Airspace Capacity Project. The analysis tasks for this project are briefly described below.

The first analysis task evaluated the impact of a proposed realignment of Miami Center Vero Beach (R3) and Melbourne (R4) Sectors to accommodate projected near term traffic growth at Fort Pierce/St. Lucie County International Airport (FPR). Currently, Vero Beach and Melbourne Sectors are split horizontally. The proposed realignment laterally realigns the existing airspace comprising r3/r4, thus establishing new Vero Beach (R3) and Melbourne (R4) Sectors and segregates vrb/fpr arrivals from VRB/FPR departures.

The second analysis task analyzed the impact of parallel airways through the Orlando corridor. The proposed westside airway would accommodate traffic flying over and west of irq (Colliers), whereas the eastside airway would accommodate the remaining J53 air traffic operating at or above FL330. The establishment of parallel airways would allow relaxation of current in-trail restrictions currently placed on Miami Center departures northbound to Jacksonville Center over orl VORTAC.

The third analysis task evaluated a proposal to establish a new Miami Center Sector R59 by realigning current Miami Center Bimini High (R40) and Georgetown (R60) sectors. No rerouting of air traffic was required. The proposed Sector R59 would primarily accommodate overflight traffic at altitude operating between the mainland U.S. north of Miami Center, and the Caribbean or South America. The new realigned Bimini (R40) sector would still accommodate some north/south overflights as well as the majority of flights that comprise the traffic to and from the Bahamas and south Florida. The new realigned Georgetown (R60) would continue to handle north/south overflights with traffic between south Florida and the Caribbean or South America comprising the majority of the traffic.

The fourth analysis task analyzed the effect of establishing a new airway west of A509/A301 for southbound Miami Center traffic bound for Cuban airspace. Currently, northbound and southbound traffic are required to share A509/A301. The proposed new airway would provide separate routes for Miami area arrivals and departures to and from Cuban airspace.

4.5 Studies in Progress

Currently, the FAA Office of System Capacity has the following airspace projects underway:

- The West Coast Airspace Modernization Analysis. This study is intended to optimize the structure of the airspace encompassed by Los Angeles and Oakland ARTCCs and their internal Approach Controls. The objective is to ensure that the aviation industry receives maximum service as a result of the Agency's investment in the large TRACON technology being fielded in California. Particular emphasis will be placed on the analysis of coastwise traffic between the areas served by SCT and NCT.
- The Chicago MetroPlex Airspace Analysis. This study will compare up to three potential airspace structures to be operated by the new expanded Chicago TRACON. Specifically, the projected study addresses critical capacity and delay problems involving Chicago Center and portions of Minneapolis, Cleveland, Indianapolis, and Kansas City Centers; Chicago and Milwaukee TRACONs, and O'Hare International, Midway, and Milwaukee/General Mitchell International Airports.